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THE BRITISH MARKET FOR MEAT
1850–1914

To judge by the continued attention of economic and social historians, the subject of British food supply since 1850 has lost none of its fascination. At a time when world food supply and demand are being carefully scrutinized it is likely that even greater interest will be taken in the history of the subject. Within total food supply it is not surprising to find meat attracting much of the attention. The literature on the sources and nature of meat supply and on the demand for the product is now quite extensive. Recently the output has grown and it is perhaps appropriate to draw together some of this material and to try to make clear the difficulties remaining, and the areas of the topic that require most work, for there are some well-trodden paths and there are some less-explored ones. We know more about the sources and magnitudes of supply than we do about the varying strengths and differences of demand, though work on the latter has been taken up by some.

This article seeks to make clear the exact nature of supply and the proper significance of the various domestic and foreign sources. It is imperative for this purpose to keep in mind what exactly is being discussed. The subject of meat may not be as difficult to handle as money but we might nevertheless have similar narrow and broad definitions, M_1 through M_5 . Some people understand the word meat to mean butcher's meat. This is a fairly narrow definition and in Britain tends to refer to beef, veal, mutton, and lamb. A broader definition would include pigmeats, though it should be noted that the American term pork sometimes used to cover all pigmeat is, in Britain, a term referring to a specific subset of pigmeat. A broader definition still would take in tinned meat, tongues, kidneys, game, and so on, stretching on occasions to poultry. Further, when imported supplies are discussed another source of confusion arises, for "meat-on-the-hoof" is sometimes included. There are obviously a variety of reasons for different definitions and the only point being made is that care should be taken to make the

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definition explicit and remove cause for disagreement over the relative importance of different suppliers to the market.

The question of demand is a difficult one, but one of course where the strictures on definition have equal applicability. The purpose of examining demand in this paper is rather to draw attention to areas we know much less about than to present any precise statement. To that extent it is much more tentative than the section on supply. The paper proceeds by considering the supply of meat in the British market in the years from 1850 to the early 1900s, and suggesting some potentially profitable areas of investigation.

Perhaps the easiest way to understand the trends in Britain's meat supplies between 1850 and 1914 is to bear in mind a number of propositions. First, although foreign sources became more important, especially from 1875, and this market was of crucial importance for the whole development of the international meat trade, the greater part of meat consumed in Britain was still home-produced by 1914. Second, the relative importance of different foreign supplies changed over the whole period. With one important exception, the Danish bacon trade, the British public relied increasingly on more distant sources of supply as time went by.

When we look at the share of the British market catered for by home and foreign supplies we discover that a recent contribution to the literature has seriously underestimated the importance of the former.

Domestic sources supplied about 60 pounds of meat per capita in the late 1860s. . . . British agriculture could supply an average of only about 45 pounds per person by the end of the century.¹

Table 1, for the United Kingdom as a whole, based on the best available estimates, shows a rather different picture.² In this table are included the three main types of meat consumed in the nineteenth century: beef and veal, mutton and lamb, pigmeat. It is considered that this list, though not exhaustive, gives a fairly accurate indication of the kinds of meat most commonly consumed. In addition, the total of imported meat also includes some unenumerated items, mainly derived from the three types already mentioned. These also include an allowance for edible offal, such as tongues, livers, hearts, and kidneys, but it must be added that because of their low value these items were not

¹ John P. Huttman, "British Meat Imports in the Free Trade Era," *Agricultural History* 52 (April 1978): 251.

² A full list of sources is to be found in Richard Perren, *The Meat Trade in Britain, 1840-1914* (London: Routledge and Kegan Paul, 1978), 3.

TABLE 1. AVERAGE ANNUAL MEAT CONSUMPTION, UNITED KINGDOM, 1841-1914

	Total Home-Produced and Imported Tons	Per-Capita Consumption			
		Home-Produced		Imported	
		Lbs.	Percent	Lbs.	Percent
1841-50	1,014,000	82.5	—	—	—
1851-60	1,091,000	83.8	96	3.5	4
1861-70	1,209,000	80.1	89	9.9	11
1870-74	1,540,300	93.1	86	15.2	14
1875-79	1,664,500	87.7	79	23.3	21
1880-84	1,725,500	81.3	74	28.5	26
1885-89	1,824,400	81.5	73	30.2	27
1890-94	2,083,700	83.2	68	39.2	32
1895-99	2,334,000	78.4	60	52.3	40
1900-04	2,470,600	77.9	59	54.2	41
1905-09	2,508,400	74.5	58	54.0	42
1910-14	2,575,400	73.6	58	53.3	42

SOURCE: Richard Perren, *The Meat Trade in Britain, 1840-1914* (London: Routledge and Kegan Paul, 1978), 3.

so commonly imported. Imported meat was partly in the form of carcasses and partly as live animals. In the latter case these have been converted to dead meat equivalents. The relatively small imports of foreign stores (mostly Canadian cattle) have not been separated from the slaughter ratios of domestic animals. Specifically excluded are rabbit meat, both home-produced and in the later nineteenth century imported from Australia; poultry, such as chickens and turkeys whether home-produced or imported; all species of game animals and birds. In addition, quantities of lard which were imported in the later nineteenth century have not been included, nor has any allowance been made for this item from home-produced sources.

The accuracy of these estimates diminishes the further back in time one goes, and it also varies for different classes of meat. For the years 1841-1870 the imported figures are more accurate than those for home production. This is because the collection of British agricultural statistics did not begin until 1867, although a fairly accurate record of imports was kept. Thus, for the first three decades of table 1 the home-produced component is more of the "guesstimate" variety rather than one based on any systematic enumeration. Again, with regard to types of meat, probably the figures for home-produced pigmeat of all kinds are the most unsure, both before and after 1867. This is because numbers of swine fluctuated quite sharply as a consequence of the "pig cycle" and also an unknown number were kept by cottagers and smallholders for their own consumption and thus escaped enumeration.

Much lower figures are obtained if Ireland is regarded as a foreign supplier. Certainly, the consumption and production of meat in Great

Britain and Ireland differed considerably, as the statistician W. G. Mulhall pointed out with data for 1889 (see table 2). It is doubtful

TABLE 2. CONSUMPTION OF MEAT, GREAT BRITAIN AND IRELAND, 1889

Origin	Tons Consumed		Lbs. Meat per Inhabitant	
	Britain	Ireland	Britain	Ireland
British	769,000		53	
Irish	237,000	95,000	16	43
Foreign	712,000	30,000	49	13
Total	1,718,000	125,000	118	56

SOURCE: W. G. Mulhall, *Dictionary of Statistics* (London: George Routledge and Sons, 1892), 286.

whether it really helps our understanding of the United Kingdom meat supply to lump Ireland along with other overseas sources. After all, political reservations aside, it was economically within the orbit of the British Isles. In the United Kingdom as a whole, main meat and live-stock flows in the nineteenth century tended to be from the pastoral and sparsely populated areas of the west and north toward the corn-growing and more densely populated urban areas of the south and east. In following this trade Ireland was merely responding to the dictates of climate and geography, thus reaping the benefits of comparative advantage and (as Huttman acknowledges) low transport costs. It is hard to see that there was any market other than mainland Britain (which in fact mostly meant England) with which Ireland could have traded with equal benefit. It would make as much sense to exclude Scotland and Wales from the domestic meat supply, because all these countries of the "celtic fringe" performed a similar function; these were peripheral pastoral producers supplying an urban industrial center with part of its meat. But it was not only animals destined directly for slaughter that crossed the Irish Sea for the English market. Included but not separately distinguished in Mulhall's foregoing estimates were specific numbers of store cattle and pigs and also calves, some of which went for veal and others that were reared. For instance, between 1877 and 1899 the ratio of stores to fat cattle in the Irish trade was approximately 5 to 4 and among swine the ratio of stores to fat was around 1 to 12.³ This feature of the trade introduces some nice definitional problems as to what proportion of these stores constituted "British" and "non-British" meat.

Turning to foreign supplies proper we find problems of definition as to origin. The imported store trade was never large-scale, but it could and did take place from most of Europe at various times from the 1840s

³ Great Britain, *Parliamentary Papers* (hereafter *P.P.*), vol. 25, "Report of the Agricultural Department of the Privy Council," C. 5995, 1890, p. 242.

up to 1879, and for Canadian cattle, sheep, and swine from the 1870s to 1892, 1896, and 1897, respectively. In addition, U.S. store sheep could be imported between 1892 and 1906.⁴ In the early years of the European livestock trade there could be some vagueness as to precise origins, a point which has not always been appreciated. For example:

Peel . . . cited the Netherlands as an example of an inelastic supplier, observing that there was no room left in that small country for the expansion of agricultural output. Peel's complacency was unjustified. After . . . 1846 . . . imports from the Netherlands quickly increased. To some extent at least, Dutch animal and meat exports diverted supplies from domestic consumption.⁵

While it is undeniable that the opening of the British market did stimulate increased emphasis on Dutch beef production, that is not the whole story. The bulk of cattle imported into Britain from Europe in the 1870s and 1880s left from the ports of Rotterdam in Holland and Hamburg in Germany. But these towns were the terminal stations of a great network of main German railway lines and branch lines that ran into Hungary, Poland, and Galicia and extended right up to the Besarabian frontier. In the 1860s the Dutch ports alone sent 150,000 cattle and 250,000 sheep to Britain, many of which passed through the markets of Austria and several German principalities before they reached their port of embarkation.⁶

It was this transit trade in traffic that was responsible for the eventual banning of Dutch and other European livestock imports into England because the British authorities realized that they came from districts where disease was endemic and the provincial authorities made no attempt to stamp it out. The fact that the Netherlands acted as an entrepôt for stock produced beyond its frontiers meant that Peel was rather less wrong about Holland than has been imagined. Or, put another way, the supply of meat from Holland was less elastic than the simple import figures for the U.K. would imply.⁷ By the late 1880s, when this transit trade to Britain had ended, Holland is recorded as

⁴ *P.P.*, vol. 15, "Report of the Departmental Committee on Combinations in the Meat Trade," Cd. 4461, 1909, Appendix 4.

⁵ Huttman, "British Meat Imports," 258-59.

⁶ *P.P.*, vol. 22, "Second Report of Cattle Plague Commissioners" (no. 3600), 1866, p. ix.

⁷ The problem of correctly identifying the origin of goods produced in inland countries was well known to nineteenth-century statisticians. It is mentioned by Stephen Bourne, "The Official Trade and Navigation Statistics," *Journal of the Royal Statistical Society* (hereafter *JRSS*) 35 (June 1872): 202-3, and by Robert Giffen, "The Use of Import and Export Statistics," *ibid.* 45 (June 1882): 189.

producing 69 lbs of meat per inhabitant per annum and consuming 57 lbs.⁸

When we look at the non-European sources of Britain's meat supplies we find that Huttman gives us a misleading impression of the nature of the product and the course of the trade. Regarding South America and the United States, we are told:

The less expensive chilled meat was cheaper to ship than the frozen, but the quality was generally lower because chilling was less effective in the preservation of meat. . . . Frozen beef composed about 35 percent of the total British meat imports from the United States. . . . The shipment of live cattle from Argentina was largely replaced by the transport of chilled beef from the late 1870s. The meat could be adequately preserved through chilling and while the chilled product was not highly esteemed on the British market, the costs of shipment in this form were low.⁹

In fact chilling was the sole process commercially applied to beef from the United States before 1900.¹⁰ It was not possible successfully to chill beef from the Argentine much before that date because the longer voyage across the equator and the current state of refrigeration engineering made it difficult to keep the South American meat fresh. But after 1900 improved techniques enabled chilled beef to be exported from South America to Britain. The incentive for this change was the higher price that chilled beef obtained over frozen. Indeed, it was precisely in order to take advantage of this premium that the meat exporting firms encouraged Argentine ranch owners to produce top-grade animals specially fed on alfalfa.¹¹ In stating that frozen meat was more popular than chilled Huttman is probably confusing beef and mutton. Mutton, whether from South America or Australasia, was always frozen, because the smaller carcasses took this process better than chilling and also the colder temperature was necessary to preserve the meat on the longer South Atlantic voyage or the journey from the Antipodes. Again this gives us some indication why the costs of shipment for chilled meat

⁸ W. G. Mulhall, *Dictionary of Statistics* (London: George Routledge and Sons, 1892), 284.

⁹ Huttman, "British Meat Exports," 251, 255, 260.

¹⁰ James T. Critchell and Joseph Raymond, *A History of the Frozen Meat Trade* (London: Constable, 1912), 191, 13. R. A. Clemen, *The American Livestock and Meat Industry* (New York: Ronald Press, 1923), 275-84 has a section on the U.S. meat trade to Britain.

¹¹ Data on prices of chilled and frozen beef from various markets in Britain can be found in *United Kingdom Agricultural Returns, 1914*, table 62. P. H. Smith, *Politics and Beef in Argentina: Patterns of Conflict and Change* (New York: Columbia University Press, 1969), 35.

were lower. Because cost was a function of distance, it would obviously be cheaper to ship chilled beef from New York to Liverpool (2,980 nautical miles) than frozen mutton from Melbourne (11,555 nautical miles).

Regarding the course of the whole international refrigerated meat trade, it is important to remember that by 1913 the United States was virtually finished as a supplier, though she still sent bacon and hams. By this time leadership had passed to the more sparsely populated Argentine for beef and was retained by New Zealand in mutton and lamb.¹² Huttman's statement, "The Australian trade with Britain . . . was much larger than that of New Zealand," is simply wrong.¹³ Every year between 1884 and 1913 New Zealand was the largest exporter of these meats to Britain, with South America second and Australia coming a poor third.¹⁴

The demand for meat can be treated like the demand for any other product. The fact that it is a perishable commodity has led some to make the suggestion that the normal demand function be reversed, but this idea has been discarded. The conventional demand function is an appropriate framework with which to approach the subject even though in our case statistical testing of the function is inappropriate because of data deficiencies. The function is:

$$Q_m = f(P_m/P_s, I/N, x_1, \dots, x_n).$$

The assumption is that supply is exogeneously determined and this single equation approach to demand for an agricultural commodity has a long history and a wide acceptance.¹⁵ That is to say the quantity demanded is influenced by a number of variables. In this specification the first of these is P_m/P_s , relative prices: the price of meat (or the price of a particular type of meat) and the price of other foods. The next important variable is real income (I) per head.

It may be appropriate to deal with the latter variable first, for it is a widely held view that demand (for most primary products) in Britain

¹² *Annual Statement of the Trade of the United Kingdom with Foreign Countries and British Possessions* (London: HMSO, various years).

¹³ Huttman, "British Meat Imports," 261.

¹⁴ *Annual Statement of Trade*. See also Perren, *Meat Trade in Britain*, 170, 213, for beef summary tables and 214 for mutton.

¹⁵ Some examples are found in B. P. Philpott and Mary J. Matheson, *An Analysis of the Retail Demand for Meat in the United Kingdom* (Canterbury, New Zealand: Lincoln College, 1965); G. W. Taylor, "Meat Consumption in Australia," *Economic Record* (March 1963); K. Fox, *Econometric Analysis for Public Policy* (Ames: Iowa State University Press, 1958), 34.

was on a long-term upward trend in the second half of the nineteenth century. There was a widespread rise in real incomes and this was translated into demand for an increased range of foodstuffs. Gross domestic product per capita (at 1913 prices) rose from £26 in 1855 to £45 at the end of the century. And consumers' expenditure per capita, on the same basis, rose from £32 in 1870 to £43 in 1899.¹⁶ Incomes remained relatively static in the first decade of the twentieth century and then some further gains were made before World War I. How the rise in real income came about after the 1870s is interesting for it was largely through an improvement in the terms of trade, in turn a consequence of the transport revolution of the third quarter of the century. Tumbling freight rates allowed the great transport of primary products, which themselves faced falling prices.

But even before the transport revolution had raised imports of meat substantially, meat was becoming part of the workers' diet. Giffen commented in 1883 that "the only article interesting the workman which has increased in price is meat, the increase here being considerable. The truth is however that meat fifty years ago was not an article of the workman's diet as it has since become."¹⁷ Murray showed that an increasing proportion of rising incomes was spent on meat products. His estimates were as follows: 1795—9.8 percent; 1887—12.5 percent; 1900—17.2 percent; 1904—17.4 percent; 1918—19.0 percent.¹⁸

We may reserve judgment on the 1795 figure, but the figures of interest are those showing a remarkable jump from the mid 1880s to the end of the century. Not only were incomes rising, but a greater proportion of these was being spent on meat products. In other words, there was a fairly high income elasticity of demand for meat; this is in keeping with other empirical studies.¹⁹ But high income elasticities of demand are more common at comparatively low levels of income. Clearly when income reaches a certain level very little more meat would be consumed out of extra income and it follows that the income elasticity of demand falls as incomes rise. This may be of use in a determination

¹⁶ C. H. Feinstein, *Statistical Tables of National Income, Expenditure and Output of the United Kingdom, 1855–1965* (New York and London: Cambridge University Press, 1976), table 42.

¹⁷ R. Giffen, "The Progress of the Working Class in the Last Half Century," *JRSS* 48 (1883): 603.

¹⁸ K. A. Murray, *Factors Affecting the Prices of Livestock* (Oxford: University of Oxford, Institute for Research in Agricultural Economics, 1931), 2. Further support can be found in D. J. Oddy, "Working Class Diets in Late Nineteenth Century Britain," *Economic History Review*, 2d ser. 23 (August 1970): 317–19.

¹⁹ Fox, *Econometric Analysis*; H. Wold and L. Jureen, *Demand Analysis: A Study in Econometrics* (New York: Wiley, 1952); H. Schultz, *The Theory and Measurement of Demand* (Chicago: University of Chicago Press, 1938).

of who consumed what meat. The suggestion must be that those at the higher levels of income were already close to optimum consumption and thus in the 1880s unlikely to have been eating imported meat, at any rate for reasons of income. (They may have switched for reasons of price but we shall come to that later.) Those whose incomes were low but increasing and who were therefore extending their consumption of all food, would have been more likely to have selected imported meats. But the point is a difficult one to resolve for we do not have sufficient data to test this as yet, and there is not an abundance of qualitative evidence with which to settle the matter.

In fact there is conflicting evidence on imported meat being consumed primarily by low income groups. Hooker writing at the time was non-committal.²⁰ Huttman claims that there is support for the view in Burnett's *Plenty and Want* that low income groups did not eat fresh meat, but we cannot find that support.²¹ There is some evidence that imported meat was consumed in good part by the better-off. For example, writing at the end of the period, Critchell and Raymond said:

In London . . . refrigerated meat has its chief triumph for the metropolis is chiefly fed with meat from overseas. A certain proportion of English and Scotch meat certainly is consumed in London, but the West-End folk are very large customers for chilled beef of the highest quality and the best grades of New Zealand sheep and lambs.²²

If the latter is true it still does not tell us anything about income response, for the determining variable may have been price, or something else. And we should also be wary of generalizing too freely from the experience of London. In other words, high income groups (with probable low income elasticities) may have eaten imported meat for reasons of price or more accurately relative price; or perhaps because the middle classes were less conservative in their diets. This brings us back then to the first variable in the function, for either way close substitutability between meats is implied by these possibilities.

The principal question at issue is to what extent one kind of meat was a close substitute for another. This is the issue raised, though rather glossed over, in Huttman's recent article: ". . . it is questionable whether meat prices would have declined much, if at all . . . without the flow of meat supplies from the United States."²³

²⁰ R. H. Hooker, "The Meat Supply of the United Kingdom," *JRSS* 72 (June 1909); See Huttman, "British Meat Imports," 251.

²¹ Huttman cites John Burnett, *Plenty and Want: A Social History of Diet in England from 1815 to the Present Day* (Harmondsworth, Eng.: Pelican, 1968), 177-239.

²² Critchell and Raymond, *History of the Frozen Meat Trade*, 279.

²³ Huttman, "British Meat Imports," 255.

This assumes close if not perfect substitutability. But we do not know the substitution elasticities for meat in this period. As noted above, lack of appropriate data precludes a rigorous estimation of these parameters but there are two avenues of approach. The first is to look at estimates for a slightly later period and the second is to examine what qualitative evidence there is from the period itself.

It has been shown that, for the years immediately following the period this article deals with, there was little possibility for substitution between several imported meats and their domestic "counterparts";²⁴ and even between some varieties of the domestic product. For example, to talk of Argentine mutton and English mutton as alternatives was ridiculous. Argentine mutton was an exceedingly low-grade product. The best imported items by 1914 were New Zealand frozen lamb and Argentine chilled beef and they were moderately good substitutes for each other and for some of the less good domestically produced meats. But generally speaking imported meat and domestic meat had separate markets. For the interwar years this was widely supported by contemporary observers: "Possibly the English and the import trades run separate courses in detail, and are devoted each to its own consuming class."²⁵

This being the case for the interwar years it is our judgment that it was in all probability the case before 1914. In the period up to 1914 technological improvements in refrigeration were taking place but there was still considerable prejudice against the imported product and it is unlikely that at any time the two were regarded as close substitutes.

Regrettably, there is very little evidence in the period itself. If we look at prices in isolation there are dangers and difficulties. For example, the only price series available for frozen meat are those for London. But London was probably far from representative. For one thing it was the central market for imported meat. It is simply not possible at this stage to know to what extent prices varied between meats across the country, nor to say why prices offered for various meats differed. Hooker's figures suggest that in the opening years of the refrigerated trade domestic meat was somewhat more expensive than the imported item. Prices were falling from this point onward and a great gap opened up between the domestic and foreign varieties so that by the first decade the price of the domestic item was more than twice that of the imported.²⁶

There is evidence that prices were lower at Smithfield than at Liver-

²⁴ Forrest Capie, "The British Market for Livestock Products 1920-1939" (Ph.D. diss., London School of Economics, 1973), chap. 4; Capie, "Consumer Preference: Meat in England and Wales, 1920-1938," *Bulletin of Economic Research* 28:2 (1976).

²⁵ F. J. Prevett, "Consumer Preference: Beef Weights and Prices," *Journal of the Ministry of Agriculture* (1933-1934).

²⁶ Hooker, "Meat Supply," 365.

pool or Glasgow (two west-coast ports with large markets). But what can be made of it? We cannot be sure if this was because Smithfield was heavily weighted with imports resulting in lower overall prices, or because Smithfield was relatively oversupplied in total with prices lower for all meat. We do know that the ratio of foreign to domestic meat varied greatly throughout the country. In London it was high whereas Dundee, Newcastle, and Norwich were said to handle home produce almost exclusively. The New Zealand authorities believed they could obtain better prices for their meat in markets other than Smithfield. And in 1895 the chief inspector of stock for New South Wales recommended a wider distribution of meat.²⁷ In 1900 the New Zealand produce commissioner complained that London agents did not push sales outside London and consequently the London market tended to be glutted.²⁸ This was followed up by a resolution of New Zealand producers to ship to ports other than London, though nothing was achieved before World War I.²⁹ It would seem that London with its exceptional storage facilities and its great attraction for Australasian shipping was in danger of being oversupplied with frozen meat. However, it could be added that the smaller cold storage facilities at the outports and smaller markets meant that they were also prone to oversupply.

How far price was a reflection of quality is an even more difficult issue. Quality is an elusive concept to lay hold on. If it is thought to be reflected in appearance and taste then it seems clear that so long as experimentation in preservation techniques was taking place, poor quality meat was entering the market, not improved any by inept handling at ports. Preserved meat was always inclined to suffer somewhat in appearance and lose something in taste. If, on the other hand, nutritive value were the measure of quality, the evidence is that this did not suffer at all. In an address at the City Tradesman's Club in London in 1910 Gilbert Anderson provided figures of tests carried out, the conclusion of which was that "the real nutritive value in each lot of meat home grown and foreign grown is almost identical."³⁰ A select committee of the 1890s had gone further: "the average excellence of imported meat was higher than home grown meat."³¹ (Whether "excel-

²⁷ Forrest Capie, "The Development of the Meat Trade Between New Zealand and Britain 1850-1914" (M.Sc. diss., London School of Economics, 1969), chap. 2; New Zealand, *Sessional Papers*, vol. 17, "Report of the Department of Agriculture, 1895."

²⁸ New Zealand, *Sessional Papers*, vol. 11, "Report of the Department of Agriculture, 1900."

²⁹ New Zealand, *Parliamentary Papers*, Appendix to Journals of House of Representatives, 1910, vol. 3, Paper H 28, p. 21.

³⁰ *Journal of the Department of Agriculture* 2 (1911): 278.

³¹ *P.P.*, vol. 12, "Report from the Select Committee of the House of Lords on the Marking of Foreign Meat, etc.," 1893-1894, para. 86.

lence" can be taken as synonymous with "nutritive value" is not clear.)

However it is unlikely that nutritive value played a part in influencing demand. Even today it is not believed important. It was more likely that the wild theories circulating in the late nineteenth century about the poisonous effects freezing had on meat influenced demand.

This section has been tentative and largely inconclusive, as any comment on demand in this period must perforce be. Its purpose has been to draw attention to the present state of knowledge and suggest how some of the gaps might be filled. We do not know how different varieties of meat were consumed by different income groups. Nor do we know how strong relative prices, consumer conservatism, taste, etc., really were.³²

We have tried to draw attention to some of the problems surrounding Britain's position in the international meat trade of the nineteenth century. On the supply side, while it does not remove all difficulties, we would suggest that it is easier to consider the United Kingdom as a whole, rather than just mainland Britain. This does not mean that we can afford to ignore meat and livestock flows *within* the United Kingdom. But while they are important, they are not unambiguous. On the whole, both fatstock and stores went from the pastoral west and north to the urban south and east. It is unlikely that relative quantities of each remained constant over the nineteenth century. At times the flow was quite complicated, as in the 1860s when there is evidence that store cattle were taken from England and the south of Scotland to Aberdeenshire in northern Scotland where they were fattened and then sent back south for sale, either as beef or fat animals.³³ More work probably needs to be done on the subject of the internal meat and livestock trade, although it must be remembered that, even after the collection of British agricultural statistics, they do not contain sufficient information to tell us all we would like to know.³⁴

Taking the free trade era as a whole, we probably know more about

³² This is an area of the subject that requires investigation. There is interesting work being carried out by D. J. Oddy, using the quite large number of Family Budget Surveys made at the turn of the century. These provide some income and geographical spread to consumption patterns and reveal that the mean consumption for low income group 3 was low but with a quite large standard deviation.

³³ W. Alexander, *The Rinderpest in Aberdeenshire* (Aberdeen, 1882), 8, 38-39, 45, 54-57; G. Menzies, "Report on the Transit of Stock," *Transactions of the Highland and Agricultural Society of Scotland*, 4th ser. 2 (1868-1869).

³⁴ Official estimates of the meat produced in Scotland as late as 1925 admitted, "No account is taken in these figures of the trade in store stock between England and Scotland" (Board of Agriculture for Scotland, *The Agricultural Output of Scotland*, 1925, Cmd. 3191 (London: HMSO, 1928), 34.

the origins and types of imported meat than we do domestic, but even here the European entrepôt trade through Germany and Holland raises problems of origin. These problems do not exist to the same extent with extra-European supplies, though sometimes Canadian cattle were sent from U.S. ports.³⁵ But what we are certain of are the types of meat sent by different countries, the preservation processes used to send them, and the relative importance of different continents and nation states within these continents as suppliers of the United Kingdom market.

Much uncertainty shrouds the factors affecting aggregate demand and that of different income groups, both for meat as a whole and for different kinds of home-produced and imported meat. It seems likely that at (and before) the start of this period demand was positively correlated with income, but this view is based on nothing more rigorous than the untested (and now untestable) observations of contemporaries. For example, in 1828 one anonymous individual tells us, "We see constantly the effect of a prosperous or unfavorable state of the manufacturing classes on the butcher markets."³⁶ And a year later, perhaps the same author states:

It has not been found that the value of live stock is materially diminished or increased by a diminution or increase in the supply, but is influenced solely by the demand in the southern markets; which demand, again, is regulated by the prosperous or adverse state of the manufacturing districts.³⁷

But at this time, supply itself was also highly inflexible, so that any possible increase in demand could only stem from rising incomes and they were reflected in higher meat prices. Between 1840 and the late 1860s the constraints on supply were gradually relaxed and there was a further dramatic relaxation in the 1870s and 1880s. If we are to believe Mulhall's figures, available per capita meat supplies were almost stationary between 1840 and 1870.³⁸ From 1870 to 1901 they rose by 1.37 percent per annum.³⁹ Also between the same dates real per capita gross national product rose by 1.53 percent per annum.⁴⁰ Thus with a shift to the right

³⁵ "Report of the Departmental Committee on Combinations in the Meat Trade," Qs 7194–95.

³⁶ "Quarterly Agricultural Report," *Quarterly Journal of Agriculture* 2:2 (August 1828): 234.

³⁷ "On Striking Fairs of Cattle, Sheep and Wool," *ibid.* 2:7 (November 1829): 86.

³⁸ Mulhall, *Dictionary of Statistics*, 15, 287.

³⁹ P. G. Craigie, "On the Production and Consumption of Meat in the United Kingdom," *British Association for the Advancement of Science, Report, 1884*, p. 844; *P.P.*, vol. 13, "First Report of the Royal Commission on Food Prices," Cmd. 2390, 1924–1925, Annex 4, p. 162.

⁴⁰ Feinstein, *Statistical Tables*.

both of supply and demand curves we have an association of rising real incomes and falling meat prices after 1880. The fact that the lower-priced domestic meats experienced the heaviest price falls, and the suspicion that the largest increase in effective demand was among the lower-income groups deserves some comment. Although we have little direct information on exactly what kinds of meat were consumed by the working class, contemporaries suggest that they would tend to buy cheaper items than the wealthy.⁴¹ But it is also likely that the inexpensive types of meat have lower income elasticities of demand than the higher priced.⁴² Thus the increase in real incomes which was not the effect of improving terms of trade was less important than the increase in supply of cheaper meats—hence the heavier fall in prices for this item.

While we know that the important change after 1880 was augmented supply we are not sure as to exactly what weight should be attached to possible contending explanations of this increase. Disease restrictions on livestock could be avoided by switching to carcass meat, so in the era of free trade the British market was open to all suppliers. It is tempting to speculate that even if this market had been protected, the increase in supply brought about by technical changes was so great that the British farmer would still have had to face falling meat prices after 1870.

⁴¹ "Report of the Departmental Committee on Combinations in the Meat Trade," Minutes of Evidence, Appendix 3, p. 308.

⁴² L. R. Christensen and M. E. Manser, "Cost of Living Indexes and Price Indexes for U.S. Meat and Produce, 1947–1971," in *Household Production and Consumption*, ed. N. E. Terleckyj, National Bureau of Economic Research, Studies in Income and Wealth, vol. 40 (New York: Columbia University Press, 1976), 408.